

REMARKS

35 U.S.C. § 103

Claims 1-3, 16, 19 and 20 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Scherr et al (US 6,003,378) in view of Cullen (US 4,454,440). This rejection is respectfully traversed for the following reasons:

As claimed in independent claims 1 and 16 and their dependent claims, the invention is directed to a pressure sensor including a surface acoustical wave conductive body having an input transducer disposed to transmit a directional acoustical wave across at least a surface portion of the body. At least one reflection transducer is disposed to receive and reflect the acoustical wave back as a reflected signal. A pressure transducer is further disposed adjacent to the surface acoustical wave conducting body, the pressure transducer comprising a flexible conductive membrane. A cavity is sealed by the membrane at a preset reference pressure; and the membrane deflects responsive to a predetermined external pressure level to contact the reflection transducer and modulate the signal reflected by the reflection transducer.

Note that as claimed the invention is to an assembly in which the surface acoustical wave conducting body does not move responsive to external pressure levels but rather the pressure transducer (flexible membrane) deflects to contact the reflection transducer and modulate the signal reflected. The claimed construction is, therefore, different and superior to the cited art which does not teach or suggest such a structure. In maintaining the reflection transducer in a fixed position, the contacts carried by the reflection transducer are likewise fixed at controllable and predictable positions relative to the flexible membrane. Furthermore, positive contact between the membrane and the contact elements is assured because of the fixedly determined location of the contact elements on the acoustical wave conducting body that does not move.

To the contrary, the cited reference Scherr teaches a membrane that is adapted to carry contact elements toward and away from a bearer plate. The Scherr assembly, by mounting the contacts to a moveable membrane, is less reliable and effective in modulating a sensor signal. The Scherr membrane is required to carry relatively heavy reflective contact elements that can affect the flexure characteristics of the membrane, causing the membrane to fatigue, weaken, and perhaps fail with time. Moreover, in the Scherr configuration, the pressure between each contact and the bearer plate varies depending on where on the membrane a given contact is located. At the anchored ends of the Scherr substrate 3, more pressure will

be required to move contact 5 against the bearer plate. Given that the membrane must carry the weight of the contact as well, even more pressure will be required making the accuracy of the pressure sensor suspect. Also, positive contact between the contact 5 of Scherr and the bearer plate is not assured. This is so because contact 5 of Scherr will approach the bearer plate at an angle as the contact 5 moves into contacting position. The flat underside surface of contact 5 will thus not contact the bearer plate across a wide area. Failing to establish a positive contact may result in a failure to modulate the signal.

To the contrary, the claimed invention overcomes the deficiencies above with the Scherr reference. The membrane (pressure transducer) of the invention is not required to carry relatively heavy reflective contact elements that can affect the flexure characteristics of the membrane. The membrane will therefore operate under minimal load making its flexure characteristics consistent from end to end. Risk of fatigue and failure of the membrane is thereby reduced. Moreover, because the membrane of the invention does not carry heavy contact elements, the membrane more accurately deflects from end to end making the pressure sensor of the invention more accurate. Still further, contact between the deflecting membrane of the invention and the stationary contacts on the reflective substrate is assured because of the more consistent flexure of the membrane under minimal load. The membrane will contact the reflective contacts with more consistent pressure and across a wide area of the upper surface of each contact. A more reliable positive contact also translates into enhanced accuracy in the pressure sensing device.

The addition of Cullen to Scherr is traversed in that there is no teaching or suggestion in Scherr for the claimed invention which specifies sealing a cavity by a deflecting membrane at a preset pressure. Scherr teaches no such configuration and does not use the substrate 3 for any secondary purpose much less as a sealing membrane for establishing a preset pressure threshold. There is no instruction whatsoever in Scherr for using the substrate 3 for such a purpose or even an appreciation for the disadvantages resulting from the unsealed, nonreferenced Scherr sensor. The Cullen sensor likewise does not teach a membrane that serves the dual purpose of sealing a pressure sensor at a referenced pressure and operatively flexing responsive to external pressure differential. The Examiner relies on column 2, lines 50-68, as support but there is no teaching therein for using a membrane for dual purposes of sealing and deflecting. Likewise, col. 3, lines 19-40, do not teach a membrane providing such dual functions. Thus, the combination of Scherr and Cullen is considered to be pure hindsight and not fairly based on the teachings of either or both references. Moreover, even if

made, the combination fails because neither reference teaches a membrane that seals at a referenced pressure and deflects response to pressure differential to modulate a sensor signal.

As to claims 19, and 20, the rejection is traversed for the same reasons set forth above. There is no support in either reference for their combination and there would be no instruction to one skilled in the art to make the combination. Moreover, even if combined, the references simply do not teach positioning a sealing and deflecting membrane to a pressure sensor that serves the dual purposes claimed.

As Scherr et al in view of Cullen fails to establish *prima facie* obviousness of the invention as recited in claims 1-3, 16, 19 and 20, it is respectfully requested that the rejection be withdrawn.

Allowable Subject Matter

Claims 4-9 and 17-20 are objected to as being dependent upon a rejected base claim. The base claim is considered patentable for the reasons set forth above.

In light of this response, all of the claims now pending in the subject patent application are allowable. Thus, the Examiner is respectfully requested to allow all pending claims.

Respectfully submitted,



Richard B. O'Planick – Reg. No. 29,096
Attorney for Applicants

The Goodyear Tire & Rubber Company
Department 823
1144 East Market Street
Akron, Ohio 44316-0001
Telephone: (330) 796-5240
Facsimile: (330) 796-9018